

FAA-C-2076
February 19, 1964

FEDERAL AVIATION AGENCY SPECIFICATION

CONSTRUCTION OF SECURITY CONTROL FACILITY FOR AIR ROUTE TRAFFIC CONTROL CENTER

1. SCOPE

1.1 Scope.- The work covered by this specification consists of furnishing all the plant, labor, equipment, appliances, and materials, and performing all operations in connection with the construction of a Security Control Building, and the associated Security lighting, including the extension of the underground conduit system for the electrical and communications system and Security fencing.

2. APPLICABLE SPECIFICATIONS, STANDARDS, AND OTHER PUBLICATIONS

2.1 Federal specifications and standards.- The Federal specifications and standards referred to herein form a part of this specification and shall be those in effect on the date of the Contract Schedule. (Information on obtaining copies of Federal specifications and standards may be obtained from General Services Administration offices in Washington, D. C., Seattle, San Francisco, Denver, Kansas City, Mo., Chicago, Atlanta, New York, and Boston).

2.2 FAA drawings.- All applicable FAA drawings and other data listed on the Contract Schedule form a part of this specification.

2.3 Other publications.- All other publications referred to herein form a part of this specification and shall be those in effect on the date of the Contract Schedule.

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3. REQUIREMENTS

3.1 Security Control Building - Architectural Requirements

3.2 Materials and workmanship.- All material shall be new and materials for which no standard of excellence is specified shall be of standard commercial quality suitable for the intended purpose. All work shall be done by competent and experienced mechanics in conformance with established standards for high-class construction.

3.3 Excavation and fills

3.3.1 Excavation

3.3.1.1 All vegetation, brush, shrubs and other perishable matter shall be removed from the area to be occupied by the building. Excavation shall be of the depth and size required for the work.

3.3.1.2 Where excavation for footings is inadvertently carried to a depth greater than is required, backfilling with earth will not be permitted.

3.3.1.3 When sound rock is encountered in excavating for footings, it will not be necessary to excavate to the depths of footing specified. Excavation need only be deep enough to provide solid bearing on the rock, which shall be cut to a firm surface, either level, stepped vertically or serrated. The rock surface must be free of seams and must be cleaned of all loose material.

3.3.2 Fills

3.3.2.1 Material for fills shall be clean earth, uniform in character and free from lumps, large stones, frozen chunks, debris, or material which will decay. Material from the excavation may be used if it is suitable. All fills are to be placed in horizontal layers not exceeding six inches in loose depth and compacted with mechanical tampers to a uniform density equal to or greater than the density of the undisturbed sub-grade material. At the time of compaction fill material shall be reasonably close to optimum moisture content.

3.3.2.2 After foundations have been constructed and have reached adequate set, trenches and excavations shall be backfilled. No backfill is to be made until authorized by the Government Representative. Backfill shall be placed on both sides of foundations at the same time, and both sides tamped prior to placing of the next layer of material. Special care shall be taken to prevent any uneven wedging action against the structure.

3.3.2.3 All trenches for utilities and other holes shall be backfilled. In filling and compacting operations care shall be taken that conduits and pipes are not dislodged from position.

3.4 Concrete and mortar

3.4.1 Concrete.- Concrete shall develop a minimum strength of 2500 psi at 28

days with a maximum slump of 3 inches. Maximum aggregate size shall be 1-1/2 inches for footings and walls, 3/4 inch for floor slab.

3.4.1.2 In the placing of concrete, care shall be taken that steel reinforcing and conduits are not displaced from position.

3.4.1.3 Immediately upon removal of forms, all minor voids shall be neatly filled with cement mortar; irregularities in exposed surfaces shall be removed and minor imperfections finished to the satisfaction of the Government Representative. Excessive or extensive honeycomb shall be cause for rejection. The contractor shall protect all concrete against injury and shall keep it warm, moist, and shielded from the direct rays of the sun for at least six days after placing.

3.4.2 Mortar.- Mortar shall develop a minimum strength of 2500 psi at 28 days and be in accordance with mortar Type M of ASTM - C270 (Specification for Mortar for Unit Masonry).

3.5 Reinforcing steel.- Reinforcing steel shall be as indicated on drawings.

3.6 Foundations.- Footings shall be poured on undisturbed earth in a dry excavation and shall be carried below frost line or as required at the site.

3.7 Concrete floors

3.7.1 General

3.7.1.1 Concrete shall not be placed until approval is given by the Government Representative.

3.7.1.2 Concrete floors are to be poured monolithically. Construction joints are to be held to a minimum and shall be placed only at locations and in a manner approved by the Government Representative.

3.7.2 Floor surfaces. The interior surface of the floor slab shall receive a steel trowel finish; the exterior surface shall receive a broom finish. All exposed corners of concrete shall be chamfered 3.4 inch.

3.7.2.1 Vinyl asbestos floor tile.- Vinyl asbestos floor tile shall conform to Federal Specification L-T-00345 and shall be 9 inches x 9 inches x 1/8 inch thick. Molded vinyl cove base shall be the set-on type 4 inches high x 1/8 inch thick. All vinyl products shall be set in an adhesive, and in the manner recommended by the vinyl manufacturer for a concrete slab on grade.

3.8 Masonry

3.8.1 Brick.- Face brick shall be sound, firm and compact, meeting the requirements of common clay building brick, Federal Specification SS-B-656, cored or solid, Grade H for absorption, Grade M or better for strength. The size, color and texture of brick shall match the brick used in the existing ARTC Center Building at the construction site and shall be approved by the Contracting Officer.

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3.8.2 Concrete (block) masonry units.- Units shall be thoroughly cured, smooth texture, conforming to ASTM-C90, and averaging 8 inches x 4 inches x 16 inches, set in full beds of mortar. Vertical and horizontal joints of exposed interior walls shall be raked to approximately 1/4 inch depth.

3.9 Steel.- Structural steel shall be in accordance with drawings.

3.10 Roof decking.- Light gage steel, 1-1/2 inches deep, Robertson Company "Q" deck, Type UK18-18, or equal, flat plate up. Decking shall be laid in accordance with manufacturer's instructions and as shown on the drawings. Deck units shall be adjusted in place before being permanently welded. Welding of deck by electric arc shall be done in a manner as to prevent burn-through and excessive distortion. Side laps of units shall have 2 inch long welds spaced approximately 12 inches on center and the lips shall be crimped midway between welds. All welds shall be sound, and upon cooling shall be given a touch-up brushing of zinc chromate primer paint. Units shall be unspliced single lengths.

3.10.1 Roofing.- Roofing shall be 5-ply, asphalt, with gravel surface equal to Carey Manufacturing Company's Specifications Number 1A, or, Bird and Sons, Inc. Specification Number 701.

3.10.2 Gravel stops and coping.- Gravel stops and coping shall be aluminum sheets complying to Federal Specification QQ-A-318 or QQ-A-327, Aluminum Alloy Plate and Sheets 5052, 6061 respectively, with commercial bright finish; the temper shall be the hardest consistent with forming operation and service required.

3.10.3 Insulation.- Roof insulation shall be mineral wool board or insulating fiberboard, not less than 1 inch thick. Insulation shall be laid with close joints, in regular courses, with cross joints staggered and bedded in hot asphalt.

3.11 Curtain wall grid

3.11.1 General.- The contractor shall furnish and erect the curtain wall grid which shall include all vertical and horizontal aluminum framing, including operating and fixed windows, panels, operating hardware, accessory framing member, spandrel anchors, bolts and necessary fittings. The aluminum finish and porcelain panel color shall match the finish and color of curtain wall grid in the existing ARTC Center Building at the construction site and shall be approved by the Contracting Officer.

3.11.1.1 Material

Aluminum castings shall comply with Federal Specification QQ-A-601, Aluminum alloy - sand castings, composition 5, temper (as cast) F.

Aluminum rods, bars and shapes shall comply with Federal Specification QQ-A-325 or QQ-A-270.

Aluminum tubing shall comply with Federal Specification WW-T-787, WW-T-788 or WW-T-789.

Aluminum bolts and rivets shall comply with Federal Specification QQ-A-261 or QQ-A-266 Temper T4.

3.12 Windows, double-hung, aluminum.- Double-hung windows, of the size shown on drawings, shall be of aluminum, in accordance with requirements for "Quality-Approved" windows in the Aluminum Window Manufacturers Association Master Specification.

3.13 Glass.- Glass shall meet Federal Specification DD-G-451, clear (or obscure, where shown) double strength, B quality, drawn window glass for windows, and 3/16 inch glass for door. Rough side of obscure glass inward. Glass shall be set without springing, bedded in putty and face puttied or with glazing clips and beads when so required.

3.14 Doors

3.14.1 Exterior door.- Door shall be 1-3/4 inches thick, aluminum with 3/32 inch clearance at jamb and head and 3/16 inch at threshold, reinforced for hardware.

3.14.2 Interior door.- Interior door shall be wood, hollow core, flush panel 1-3/8 inches thick.

3.14.3 Hardware for doors.- Exterior door shall have 3 concealed butt hinges and concealed lockset, locked by push button from inside with manual release and locked by key from the outside. Door shall have automatic door closer. All exposed hardware shall have aluminum finish.

Interior door shall have 2 concealed butt hinges and concealed lockset, locked by push button from inside with an automatic release. An emergency key for opening from outside shall be provided.

3.15 Plaster work.- All plaster work shall be 3 coats on metal lath and shall include the necessary metal furring and accessories, with a steel trowel finish.

3.15.1 Plaster ceiling

Scratch Coat - 1 part gypsum plaster to 2 parts sand.

Brown Coat - 1 part gypsum plaster to 3 parts sand.

Finish Coat - Prepared gypsum (lime free) white finish plaster, or 3 parts lime putty to 1 part calcined gypsum.

3.15.2 Lath.- Metal lath shall comply with Federal Specification QQ-B-101, base metal for plastering and stucco construction, zinc coated - 24 gage flat, expanded metal, minimum weight 3.4 pounds per square yard.

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3.15.3 Steel wire.- Steel wire for attaching furring to structural steel shall comply with Federal Specification QQ-W-432 finish D, minimum diameter .062 inch.

3.15.4 Furring channels.- Furring channels shall be cold rolled, zinc coated minimum flange 7/16 inch wide, minimum depth 1-1/2 inches.

3.15.5 Sand for plaster.- Sand for plaster shall be clean, well-graded, free from soluble salts and organic matter. All sand shall pass a No. 4 sieve.

3.15.6 Gypsum plaster.- Gypsum plaster shall comply with Federal Specification SS-P-402 Type N (Neat), or Type W (Wood Fibered). Neat plaster shall be fibered for scratch coat.

3.15.7 Lime for plaster.- Hydrated lime shall comply with Federal Specification SS-L-351.

3.16 Counter and gate.- Counter and gate shall be as shown on the drawings, including all required hardware. Field dimensions shall be taken to ensure that the finished product will completely fill the provided space. Counter top shall be high pressure laminated plastic sheet conforming to National Electrical Manufacturers Association (NEMA) Standards LP2-1957, Micarta or Formica or equal, 1/16 inch thick, black with a low glare finish. Edging shall be aluminum.

3.17 Painting.- All painting shall be in accordance with Specification FAA-567 and shall comply with the paint system numbers set forth in Tables I, II and III therein.

Exterior exposed metal surfaces, other than aluminum, shall be painted 3 coats in accordance with System ST-3-Alkyd or ST-4 Phenolic System.

Interior ceiling shall be painted 2 coats in accordance with System BI-1 Latex or BI-2 Pigmented Oil Primer Sealer and Alkyd Flat Paint.

Concrete masonry shall be painted 2 coats in accordance with System BE-8 Polyvinyl Acetate Latex Paint.

Interior wood areas including counter and gate shall be painted 2 coats in accordance with System BI-3 Synthetic Primer and Alkyd Semi-Gloss Enamel Finish Coat.

Colors.- Paint color scheme shall be as set forth in Invitation for Bids.

3.18 Security Control Building and Security Lighting - Electrical Requirements

3.19 Materials and workmanship.- These specifications shall be considered as minimum requirements and shall not prevent the contractor from furnishing and installing higher grades of material and workmanship than are specified herein or when so required by the drawings. Materials to be furnished by the contractor under this specification shall be the standard products of manufacturers regularly

engaged in the production of such equipment and the manufacturers' latest designs that comply with the specification requirements. Wherever standards have been established by Underwriters' Laboratories, Inc., the material shall bear the UL label. National Fire Protection Association Standard No. 70, National Electrical Code, shall form a part of this specification.

3.20 Wiring methods

3.20.1 Conduit.- Unless otherwise specified or shown on drawings, all wiring shall be installed in conduit.

3.20.2 All conduits installed in floor fill or slabs shall be rigid zinc-coated, steel conduit, Federal Specification WW-C-581. For all other locations except paragraph 3.20.3 either rigid steel conduit or electrical metallic tubing may be used.

3.20.3 Conduits were previously stubbed outside the ARTCC Building. The necessary conduits shall be extended to the Security Building using similar types of material, sizes and construction as existing conduits. Underground conduit shall be installed not less than 18 inches below grade to top of conduit. Conduits and circuits for parking area lights shall be left as existing.

3.21 Wire and cable

3.21.1 General.- No telephone or signal wires are included, except that intercommunications system and security lighting control shall be installed as specified herein or as shown on the drawing.

3.21.2 Wiring in underground conduit, outdoors, below or in ground floor slabs shall be copper, type RHW, Federal Specification J-C-103 or Type THW, Federal Specification J-C-129.

3.21.3 Interior wiring in conduit shall be copper, type RH, Federal Specification J-C-103. Home runs longer than 75 feet to first outlet shall be No. 10 AWG.

3.21.4 Wiring for the intercommunication system shall be as recommended by the intercommunication equipment manufacturer.

3.22 Equipment

3.22.1 Panelboards.- All panelboards shall be of the circuit breaker type in accordance with Federal Specification W-P-115 and W-C-375, Type I, Class 1. Circuit breakers shall be Class 2b or 2c for 120/208 volt circuits and Class 2d for 277/480 volt breakers. All circuit breaker connections shall be bolted. Each cabinet shall be furnished with a flush combination cylinder lock and latch. Locks shall be fitted with the same key as existing panelboards in the ARTCC Building. Furnish two keys for each cabinet. Panelboards shall have engraved laminated identification plates indicating operating voltage, phase, and function. Plates shall be similar to those existing in the ARTCC Building.

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3.22.2 Lighting switches.- Lighting switches shall conform to Federal Specification W-S-896, Table III, Style 50, 20 ampere, 120 volt, ac. Wall plates shall be brown molded plastic according to Table IV of Federal Specification W-S-896. Mounting height shall be 54 inches above finished floor.

3.22.3 Receptacles.- Receptacles shall be 15 ampere, 120 volt grounding duplex type conforming to Federal Specification W-C-596. Wall plates shall be brown molded plastic. Mounting height shall be 12 inches above finished floor.

3.22.4 Intercommunications.- A master station shall be installed in the Security Control Building. The master station shall be a similar model and by the same manufacturer as the intercommunication master stations in the ARTCC Building. The master station shall be capable of selectively calling and receiving calls from eight other master stations. The contractor shall interconnect the Security Building's master station to the eight other masters as directed.

3.22.5 Transformer.- The dry type transformer installed in conjunction with the panelboards shall be three phase, 480 - 120/208Y volts, General Electric Type F, Catalog No. 9T 22Y3003, or equal.

3.23 Lighting fixtures

3.23.1 Fluorescent fixtures.- Ballasts shall satisfactorily start and operate the type of fluorescent lamp furnished and shall meet the current practice and requirements of the "Certified Ballast Manufacturers." Fluorescent fixtures shall be commercial type, two lamp, ceiling mounted with two 40 watt T12, rapid start, warm white lamps. Fixtures shall be Sylvania Catalog No. CL 242-45-RS, or equal.

3.23.2 Exterior fixtures.- Exterior fixtures for Security Control Building shall be ceiling mounted fixture manufactured by McPhilben Lighting, Inc., Catalog No. 43-46VT with Catalog No. P-430 AC Junction Box, or equal.

3.23.3 Toilet room wall bracket light shall be keyless with outlet, Swivelier Catalog No. AL-2101-ND, or equal.

3.24 Security lighting

3.24.1 General.- Security lighting fixtures are located on the drawings to provide a lighted zone approximately forty feet wide around the ARTCC Building and garage-generator building, lighted to an approximate two-foot candle intensity. These fixtures shall be controlled with an astronomic time switch for automatic on-off control. In addition, a manual overriding control shall be installed adjacent to the fire alarm cabinet on the wall of the control room. This manual control shall allow the security lighting to be manually turned off. This control shall also allow automatic control to be resumed when so desired.

3.24.2 Security lighting fixtures shall be suitable for outdoor installations

and shall have cast aluminum housing and door, with door hinged to housing and gasketed. Reflector shall be one-piece polished Alzak with Pyrex stippled lens. Mounting shall be 3/4 inch stem. The fixture shall be equipped with 500 watt, 120 volt, quartz iodine lamp and shall have a light distribution equal to the curves shown on the drawing. The flood light shall be Crouse-Hinds Catalog No. QFL8-47613A-ST, or equal, complete with 500T 3A/CL lamp. All condulets, junction boxes and similar devices used for security light installation shall be in accordance with Federal Specification W-C-586.

3.24.3 Astronomic time switch shall be installed in the basement maintenance office (Room B-7) and shall be a synchronous clock with one "on" and one "off" adjustable operation each day. Contacts shall be rated 10 amperes at 120 volts ac. Astronomic dial shall be furnished for the latitude of the facility location. Time switch shall be Sangamo Electric Company Type SJ, or equal.

3.25 Security Control Building - Plumbing and Heating Requirements

3.26 Mechanical equipment

3.26.1 Soil pipe.- All soil pipe and fittings below the floor slab and ground shall be extra heavy cast iron in accordance with Federal Specification WW-P-401.

3.26.2 Drainage fittings.- All drainage fittings shall be cast iron standard weight in accordance with Federal Specification WW-P-491.

3.26.3 Brass pipe.- All underground water supply piping between buildings shall be brass, Grade A, red brass standard weight iron pipe size and thickness in accordance with Federal Specification WW-P-357.

3.26.4 Copper pipe.- The interior water piping and fittings shall be copper in accordance with Federal Specifications WW-P-377 and WW-P-460.

3.26.5 Lavatory.- Lavatory shall be vitreous china 20 inches x 18 inches with overflow and anti-splash rim in accordance with Federal Specification WW-P-541, No. VB 20 Lavatory. All exposed fittings shall be chromium plated.

3.26.6 Water closet.- Water closet shall be vitreous china, siphon jet, elongated bowl with a low tank and fittings in accordance with Federal Specification WW-P-541, outfit No. E-46L, figure No. 1.

3.26.7 Electric water cooler.- Electric water cooler shall be floor mounted, self-contained, with bubbler mounted on the top. Water cooler shall be Type I Size 10 and comply with Federal Specification OO-C-566c. Refrigeration system shall be hermetic type. Motor shall be wound for 115 volts, 60 cycle, single phase, alternating current and shall be of the capacitor type.

3.26.8 Electric space heater.- Electric space heater shall be wall mounted suspension type and located where shown on the applicable drawings. Heater shall have multiple type strip heater elements having a combined rating of not less

than shown on rating schedule on the drawing. The case shall be painted with a suitable rust inhibiting primer and finish paint. Heater shall be provided with a sheet steel baffle and nickel plated reflector so that all heat will be directed away from the wall. A manually operated reset thermal cutout shall be provided to shut off the electric supply automatically in the event of overheating. Unit type electric space heater shall be equipped with direct connected fan and shall be provided with brackets of welded iron construction for suspension from a wall mounted bracket. Control of electric heater shall be a space thermostat. Thermostat may control the heater directly if of adequate rating, otherwise a separate contactor shall be used. Heater shall comply with all the standards of the Underwriters' Laboratories, Inc., and the National Electric Code.

3.26.9 Toilet paper holder.- Toilet paper holder shall be in accordance with Federal Specification WW-P-541, Type 435.

3.26.10 Towel cabinet.- Cabinet for folded paper towels shall be Type 445, Federal Specification WW-P-541.

3.26.11 Wall mirror.- Provide a wall mirror approximately 12 inches x 16 inches in size with metal frame over lavatory.

3.27 Workmanship

3.27.1 Pipe joints shall be well made and all lines pitched and supported in accordance with standard practice and local ordinances. Install cut-off valve and drain on water supply near where it connects into the main building plumbing system. Water supply line where it passes through building foundation walls shall be placed below frost line depth for the particular locality. Hose bibb shall be brass threaded to permit hose attachment. All pipe projecting through the building roof shall be water tight lead flashed. Provide chromium plated floor or ceiling plates on all pipes passing through floor, wall or ceiling.

3.27.2 Soil, waste, vent and drain piping shall be sized as shown on the drawings. Pipes between buildings must be run in straight lines and have uniform grade of 1/4 inch per foot. Soil line and water supply shall be placed in a common trench and to a depth to position piping below the frost line. Water piping will in all cases be positioned above waste line in common trench. Bottom of trench shall be evenly graded, providing bell holes as necessary so that barrel will have a solid bearing for the full length of pipe. After the piping has been tested and approved, back fill excavation with approved material tamped and/or puddled compactly in place. Clean outs without manhole shall be installed in the cast iron soil line below the ground where deemed necessary depending on the underground piping configuration.

3.28 Security Fence - Structural Requirements

3.28.1 Security fence.- The fence to be erected under this specification shall be in accordance with FAA Specification FAA-E-2065 "Fences", dated December 27, 1963, and shall be Type I "Steel Post Fences, Class F, Chain Link Fences - Steel

4. SAMPLING, INSPECTION AND TEST PROCEDURES

4.1 Security control building - architectural samples.- One (1) finished porcelain enameled panel a minimum of 1 inch x 2 inches shall be furnished for approval by the Government's Representative to determine conformance to specifications and color matching.

4.2 Security control building and security lighting - electrical

4.2.1 At the time of final inspection, all connections at panels, switches and similar devices and all splices shall have been made. All circuit breakers and fuses shall be in place and the circuits continuous from point of service connections to all switches, receptacles, outlets and similar devices. The system shall test free from short circuits and grounds and have an insulation resistance between conductors and between conductors and ground not less than the requirements of Section 110-19 of the National Electrical Code.

4.2.2 The contractor shall furnish the instruments, transformers, labor, etc. for making the above tests. Tests shall be conducted in the presence of an authorized Government Representative.

4.3 Security control building - plumbing and heating

4.3.1 Plumbing and drainage system.- The entire system of soil, waste, drain and vent piping must be tested with water and proved tight to the satisfaction of the Government Representative before connections are made to the main building plumbing system. Trenches are not to be backfilled until the piping is inspected and approved by the Government Representative. Each connection from the security building and the interconnecting piping to the main building plumbing system shall be filled with water and hydrostatically tested with a pressure equivalent to a water leg ten feet higher than the highest point in the line. The water shall be allowed to stand at least 30 minutes for inspection, after which if the lines prove tight, connections are made with the main system and trenches backfilled.

4.3.2 Water supply system.- At the completion of the work, the water supply system in its entirety must be tested to a hydrostatic pressure of 50 pounds over the working pressure but in no case less than 100 pounds per square inch. After satisfactory completion of this test, connections are made to the main water supply and trenches backfilled.

4.4 Utility connections.- Plumbing and water supply connections will be indicated on plot plan furnished contractor.

5. PREPARATION FOR DELIVERY

5.1 Not applicable.

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6. NOTES

6.1 Not applicable.

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